REMARKS

1. Interview Statement:

Applicants appreciate the Examiner's courtesy in granting the telephonic interview of April 11, 2006 with Mr. John Shin. Mr. Shin, who has since left the undersigned's office, reported as follows.

In the interview, Mr. Shin emphasized the differences between the invention and Peterson, but the Examiner indicated that he interpreted "none of said via conductors" in the last lines of claim 1 as being satisfied by Peterson et al.'s at least one via conductor (V1, V2 and V3 in the Appendix to the Final Office Action) not being physically located above the through hole. The Examiner also pointed out that the antecedent basis for the cited phrase "none of said via conductors" is confusing. Based on the discussion with the Examiner, amendments to claims 1 and 5 were considered to clarify the claim language.

2. Response to Outstanding Rejections:

Claims 1, 3, 5 and 6 are rejected, while claims 2 and 4 are withdrawn from consideration as being directed to a non-elected invention.

In response to the objection to claims 1, 3 and 6, claims 1 and 6 have been amended to clarify antecedent basis as pointed out by the Examiner.

Withdrawal of the objection is respectfully requested.

Claims 1, 3 and 5 were rejected under 35 U.S.C. §103(a) as being unpatentable over Peterson et al. (U.S. Patent No. 4,963,697) in view of Kawasaki et al. (U.S. Patent No. 6,930,258).

The Examiner cited Peterson et al.'s modified circuit board as disclosing all elements of Applicants' claimed invention, except for the filling material filling the hollow portion of said through hole. Kawasaki et al. was cited as disclosing a through hole in the core substrate filled with a filling material to have better strength of the via hole for enhanced reliability of the circuit board.

Further, in reference to the marked-up version of Peterson et al.'s Fig. 1 attached to the Final Office Action, the Examiner specifically pointed to via conductors V1, V2 and V3 as not being located above the through hole TH.

Applicants respond as follows.

The independent claims are claims 1 and 5. Although both claims read on Fig. 1, claim 5 includes the feature of the transmission line 7 provided between any two of the plurality of resin layers and positioned above the first earthing conductor layer.

To clearly distinguish over Peterson et al. where via conductor 106 is positioned over through hole TH, claims 1 and 5 have been amended to recite that no via conductors are positioned above said through hole.

The significance of providing a transmission line structure where the via conductors 61 and 62 avoid positions above the through hole 22 is discussed at pages 4-5 of the specification.

Namely, as shown in Fig. 3B, thermal expansion of the through hole conductor 22 is smaller than that of the surrounding resin materials 23 and 25. In case the wiring resin substrate is cooled, on the other hand, a reverse phenomenon occurs so that the shrinkage of the filling material 23 is concentrated in the vicinity of the center axis of the through hole 21, as shown in

Fig. 3C, to pull down the overlying cover-shaped conductor 4 and resin layer 3. Therefore, via conductors 61 and 62 are easily influenced, if they lie over the through hole 21, by the influences of the push-up or pull-down of the core substrate 2. That is, in accordance within the invention as claimed in claims 1 and 5, the influence of the aforementioned push-up/pull-down from the core substrate can be prevented by arranging the via conductors constituting the connection portion at positions avoiding the through hole.

Regarding the subject negative limitation, one of ordinary skill in reading the specification, and specifically the above passage, would readily understand that the problem solved by the invention applies not only to the via conductors constituting the connection portion, but also to any via conductor positioned above the through hole. Thus, it is respectfully submitted that Applicants were in full possession of the invention of amended claims 1 and 5 at the time of filing their application, and that the subject limitation (i.e., no via conductors are positioned above said through hole) patentably distinguishes over the combination of Peterson et al. and Kawasaki et al.

New independent claim 7 specifically claims the structure shown in Fig. 1 of the specification, where the transmission line 7 is enclosed by the first and second earthing conductor layers 4 and 5. As recited in new claim 8, the structure of claim 7 shields the transmission line from external noise.

The specific structural feature of claim 7 is neither disclosed nor illustrated by Peterson et al. For example, although one could consider that the second earthing conductor layer (i.e., first conductor layer below upper/top dielectric layer) of Fig. 1 of Peterson et al. is provided in a

shape containing the transmission line (second conductor from top layer on the left in Fig. 1), Peterson et al. certainly does not show a structure where the transmission line is enclosed by first and second earthing conductor layers as required by new claim 7.

Withdrawal of the foregoing rejection is respectfully requested.

Claim 6 was rejected under 35 U.S.C. §103(a) as being unpatentable over the modified substrate of Peterson et al., as applied to claim 5 above, and further in view of Shimada et al. (U.S. Patent No. 6,353,189).

Applicants rely on the response above with respect to the rejection over Peterson et al.

Withdrawal of all rejections and allowance of claims 1-8 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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